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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,598	11/21/2003	Joel D. Oxman	59092US002	3112

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EXAMINER

BERMAN, SUSAN W

ART UNIT	PAPER NUMBER
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1711

DATE MAILED: 07/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/719,598

Applicant(s)

OXMAN ET AL.

Examiner

Susan W. Berman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 and 34-59 is/are pending in the application.
- 4a) Of the above claim(s) 1-23, 25, 27, 30, 31, 37-56 and 59 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24, 26, 28, 29, 32, 34-36, 57 and 58 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

Claims 34 and 35 are now grouped with the elected species of the elected invention in response to the amendment of claim 26.

Response to Arguments

The objection to the specification as failing to provide proper antecedent basis for the claimed subject matter is withdrawn. Applicant points out the iodonium salt “4-(1-methylethyl)phenyl 4-methylphenyliodonium tetrakis(pentafluorophenyl)borate” is disclosed on page 4, lines 3-4 and on page 15, lines 27-28.

Applicant's arguments filed 04/26/2006 have been fully considered and the rejections of claims under 35 U.S.C. 102(b) as being anticipated by Berner et al (4,560,709) and under 35 U.S.C. 103(a) as being unpatentable over Smith (4,394,403) are hereby withdrawn.

Election/Restrictions

Applicant has clarified that the elected species of photoinitiator system comprises 2-ethyl-9,10-dimethoxyanthracene, 4-(1-methylethyl)phenyl 4-methylphenyliodonium tetrakis(pentafluorophenyl)borate and one of the Markush group of visible light sensitizers now set forth in claims 24, 26 and 57.

Claims 30 and 31 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, namely a silicon-containing epoxy resin. Applicant elected an epoxy resin, not a silicon-containing epoxy resin.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 24, 26, 28, 29, 32, 33, 36, 57 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berner et al (4,560,709). Berner et al disclose photopolymerizable mixtures wherein the catalyst comprises an aromatic iodonium salt and a ketone of formula I, II or III. The compositions can also comprise a photosensitizer, such as a derivative of anthracene, a derivative of thioxanthone or an organic dye, that shifts the spectral sensitivity into specific ranges (column 6, lines 56-60). Sensitizers for daylight curing are said to be described in US 3,729,313 (column 7, lines 1-9). Table 2 discloses compositions comprising 9,10-diethoxyanthracene as the photosensitizer in combination with diphenyl iodonium hexafluorophosphate and 2-benzoyl-2-propanol as the ketone. None of the examples includes a combination of the sensitizers taught.

The difference from the instantly claimed compositions is that Berner et al do not specifically require a visible light sensitizer as the photosensitizer component of the initiator system taught or teach that the photosensitizer comprise a visible light sensitizer in combination with a derivative of anthracene. However, Berner et al teach that curing in daylight is possible in the presence of suitable photosensitizers and incorporates the disclosure of photosensitizers in US 3,729,313 (column 7, lines 1-11). US '313 teaches various organic dyes that may be used in

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combination for broadening the light response and/or increasing the speed of polymerization (column 2, lines 26-45) Dyes responsive to visible light are set forth in Examples 20-34). It would have been obvious to one skilled in the art at the time of the invention to include a combination of photosensitizers including a visible light photosensitizer in the compositions disclosed by Berner et al, selected from the teachings of Smith '313 incorporated as into the disclosure of Berner et al. Berner et al provide motivation by teaching the use of photosensitizers to shift the spectral sensitivity into specific ranges, specifically teaching derivatives of anthracene and organic dyes and referring to US '313 for disclosure of appropriate organic dyes for curing in daylight. Smith '313 provides motivation to use an organic dye in combination with a derivative of anthracene by teaching that combinations of sensitizers can be used to broaden the light response and/or increase the speed of polymerization. One of ordinary skill in the art at the time of the invention would have been motivated by a reasonable expectation of providing a composition wherein the iodonium salt is sensitized to generate free radicals by the presence of sensitizers such as derivatives of anthracene and organic dyes, as taught by Smith '313. One of ordinary skill in the art at the time of the invention would have been further motivated to employ a combination of photosensitizers for an iodonium salt including the alkoxyanthracene taught by Berner et al and an organic dye, as taught by Smith '313 by incorporation into Berner et al for disclosure of suitable visible light sensitizers.

Claims 24, 26, 28, 29, 32-36, 57 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olofson et al (6,706,403, filed 05/12/2000). Olofson et al disclose photopolymerizable epoxy resin compositions and a photosensitive initiating system. The

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photosensitive system comprises iodonium or sulfonium salts and sensitizers, such as anthracene, alkoxy anthracenes and camphorquinone, reactive to light in the visible region (column 12, lines 27-41). The disclosure of visible light sensitizers in US 3,729,313 is incorporated by reference. US '313 teaches using combinations of the disclosed sensitizers.

Thus, It would have been obvious to one skilled in the art at the time of the invention to employ a combination of the photosensitizers taught by Olofson et al , such as an alkoxy anthracene and camphorquinone, in the initiator system comprising an iodonium salt disclosed by Olofson et al. One of ordinary skill in the art at the time of the invention would have been motivated by a reasonable expectation of extending the photosensitivity of the UV sensitive iodonium salt to the visible spectrum to improve the cure through a UV light absorbing glass sheet, as taught by Olofson et al (column 12, lines 27-41).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kaisaki et al (5,856,373) disclose a visible light curable epoxy with enhanced depth of cure. An aryl-odonium salt and an alpha-dicarbonyl visible light sensitizer are taught for the initiator system. Anthracene derivatives are not mentioned.

Neckers et al (5,639,802) disclose an initiator system for cationic polymerization comprising an iodonium salt , a xanthene or fluorene dye and a hydrogen donor.

Oxman et al (5,980,253) teach an initiator system comprising an iodonium salt, an alpha-diketone sensitizer, such as camphorquinone, and an electron donor, such as an aminobenzoate.

Palazzotto et al (5,545,676) disclose an initiator system comprising an iodonium salt, an alpha-diketone sensitizer, such as camphorquinone, and an electron donor, such as an aminobenzoate.

Yang et al (6,949,297, filed 11/02/2001). Yang et al disclose curable adhesives comprising a polyacrylate and an epoxy. Cationic photoinitiators, such as iodonium salts, and photosensitizers, such as alkoxy anthracenes or camphorquinone, are taught (column 8, lines 16-57). Light between 200 to 800 nm is said to be effective for curing (column 10, lines 7-18).

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susan W. Berman whose telephone number is 571 272 1067.

The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571 272 1078. The fax phone number for the organization where this application or proceeding is assigned is 571 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SB
7/5/06



Susan W Berman
Primary Examiner
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